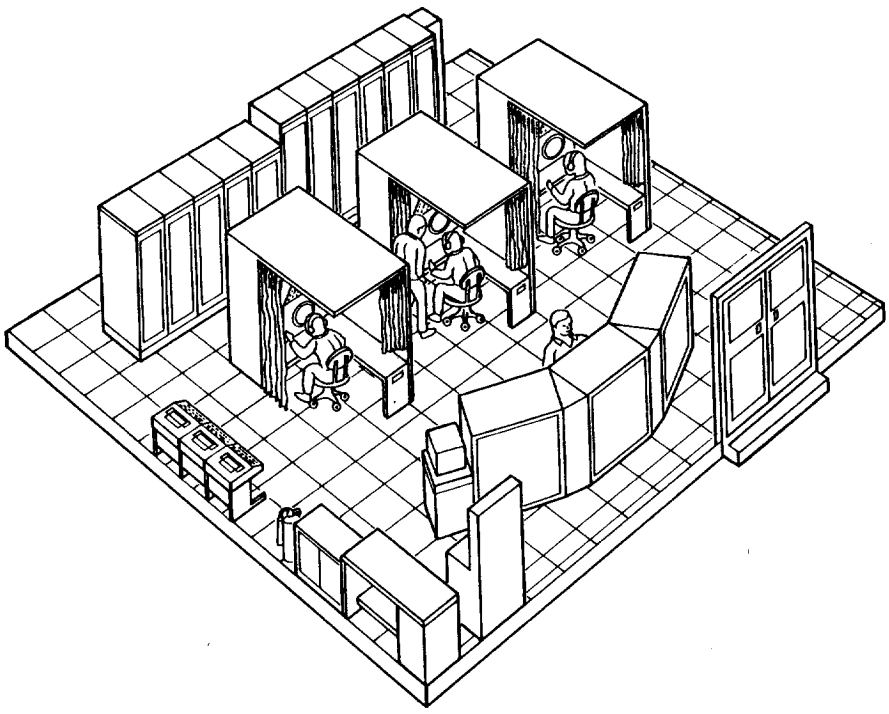
DIRECTORY OF NAVAL TRAINING DEVICES



P-3C AIRCRAFT RADAR/MAD/ESM OPERATOR TRAINER, DEVICE 14B40A

TRAINING CATEGORY:

ANTI-SUBMARINE WARFARE
(Airborne ASW)

ORIGINATING AGENCY:

DCNO/AIR

SECURITY CLASSIFICATION:

The trainer equipment hardware in itself is unclassified. However, when in use or operation, data produced and displayed will be confidential and/or secret.

PURPOSE:

The purpose of this device is to make possible the training of P-3C aircraft SS3 operators in the use of the equipment contained therein.

INTENDED USE:

Device 14B40A is intended for use as a classroom training unit. Trainees should have basic skills in radar recognition, IFF, MAD/SAD and/or ESM systems.

FUNCTIONAL DESCRIPTION:

The device comprises three trainee stations, an instructor/operator complex, a tactical situation display, a power distribution cabinet, an input/output system cabinet, and a computer complex. In addition, there are three DECwriter units, a work bench and security and storage cabinets. A motor-generator set is used to generate 400 Hz power.

From the instructor/operator's station it is possible to control the

trainer, including functions such as initial conditions set-up, freeze and reset. Training mission control includes the insertion, activation, and maneuvering of targets, environmental conditions insertion, and "own" aircraft maneuvering. All three trainees (one at each SS3 station) are monitored by a single roving or stationary instructor at his console, so that their performance may be observed and, if necessary, correct proceduresexplained (an intercommunication system is provided for this).

Each of the SS3 units has been constructed and designed to completely duplicate the Sensor Station 3 found aboard the actual aircraft. The instrumentation is all functional, except for the Infrared Detecting Set which is a mock-up.

The trainer's computer complex comprises three PDP-11/55 (DEC) computers designated A, B and C. The aircraft operational programs used by the on-board CP901 computer are simulated by Computer C. The other systems which are simulated in Computers A and B include: AN/APX-76 115 Search Radar System and AN/APX-76 IFF System; AN-ASQ-81 and AN/ASA-64 Magnetic Anomaly Detection/Submarine Anomaly Detector (MAD/SAD) System; and the AN/ALQ-78 Electronic Support Measures (ESM) System. The AN/AAS-36 Infrared Detecting Set (IRDS) is provided in a non-functional mock-up configuration.

The Radar and IFF simulation includes the generation of environmental effects, target video, IFF video, antenna control and stabilization, and Radar System control, creating a composite Radar video for Sensor Data Display (SDD). The ESM system is totally simulated, except for the C-8792 Control Indicator.

The MAD/SAD System simulates the performance capabilities of the units therein, as well as that of the AN/ASA-71 Selector Control Group, and the AN/ASA-65 Magnetic Compensator Group (also listed as Nine Term Compensator, - 9TC), The effects of operator-controlled inputs are observable on the MAD display and control indicator.

The hardware used in these systems includes both modified and unmodified avionic equipment. These units include:

1. Unmodified Avionic Equipment:
   a. MX-7974/ASA-69 Radar Interface Unit
   b. C-7557/ASA-69 Scan Converter Control Panel
   c. C-6983/ASQ-81 Detecting Set Control
   d. C-8935/ASA-65 Control Indicator

2. Modified Avionic Equipment:
   a. C-7512/APS-115 Radar Control Panel
   b. C-7959/APX-76 IFF Control Panel
   c. A327 Auxiliary SIF Control
   d. R032/ASQ Milliammeter Recorder
   e. C-7693/ASA-71 Selector Control Panel

PHYSICAL DESCRIPTION:

The dimensions, weight, and floor loading requirements for each major component are listed in Table 1.

Table 1. Device 14B40A Trainer Component Dimensions and Weights

UNIT NAME	QTY	WIDTH (IN.)	DEPTH (IN.)	HEIGHT (IN.)	WEIGHT (LB.)	FLOOR LOAD (LB./SQ FT)
Inst/Opr Console	1	158	57	56	1500	24
SS3 Trainer Station	3	100.5 ea	51 ea	80 ea	1800 ea	50 ea
Power Rack	1	48	28	82	800	89
I/O Rack		84	28	82	1200	75
Computer Complex	1	105	30	72	3090	141
Tac Sit Display	1	27	55	56	500	120
Computer Floor	1				7570	9
Work Table	1	58	24	37	200	20
Security Cabinet	1	36	24	30	475	119
Utility Cabinet	1	30.5	17.5	87	200	50
DECwriter	3	24 ea	24 ea	37 ea	100 ea	25 ea
Motor Generator Set	1	34	22	22	800	160

OPERATIONAL EQUIPMENT:

The operational assemblies used in this trainer are listed in Table 2.

Table 2. Device 14B40A Trainer Operational Equipment

PART NO.	Description	*
ASA-70	Recorder Display	U
AM3365/AIC22(V)	Speaker	U
C8792/ALQ-78	ESM Cont. Indicator	M
C7512/APS-115	Radar Control Panel	M
A327	IFF Aux. Control	M
C6983/ASQ-81	MAD Control Panel	U
C8935/ASA-65	Compensator Control	U
C7557/ASA-69	Scan Converter Cont.	U
IP918/ASA-70	Sensor Data Dis.(SDD)	U
A302	MAD Selector Control	M
RO-32/ASQ	MAD/SAD Recorder	U
AN5744-2	Inclinometer	M
M96AA (Telephonics No. 209)	Boom Microphone	U
H-173 ( )/AIC	Head Set	U
MX-7930/APS-115	Antenna Position Logic Unit	U

NOTE: Quantity for each unit is 3. Exceptions: ASA-70, one; and C7512/APS-115, six.
* M = Modified; U = Unmodified

EQUIPMENT REQUIRED (NOT SUPPLIED):

This includes commonly used test equipment such as oscilloscopes, multimeters and similar instrumentation. Standard probe sets, extender cards and socket adapters are recommended.

POWER REQUIREMENTS:

The trainer will require the following electrical service from the facility power source: 120/208 Vac ± 10%, 60 Hz, 92 KVA, 3 phase, 4-wire Wye, grounded neutral. In addition, a 3-pole, 50-ampere circuit breaker is provided for the 400-Hz motor-generator, which is located externally to the trainer room. A central ground plane underneath the trainer raised floor is connected to the facility ground.

INSTALLATION REQUIREMENTS:

The trainer assembly is mounted on a raised Micarta flooring of interchangeable 2' square panels. The floor area covers a minimum of 900 square feet. An access doorway should be not less than 60" wide by 85" high, and located behind the instructor's complex. Area lighting by 50' candle rapid-start fluorescent fixtures is recommended. However, the instructor's console and SS3 stations are self-illuminated for day or night missions. Air conditioning requirements are approximately 80,000 BTU/hour.

PUBLICATIONS FURNISHED:

1. Maintenance Handbook for RADAR/MAD/ESM Trainer, Device 14B40A
2. Planned Maintenance System (PMS) Publication for RADAR/MAD/ESM Trainer, Device 14B40A
3. Parts Catalog for RADAR/MAD/ESM Trainer, Device 14B40A
4. Commercial Computer Documentation Set for RADAR/MAD/ESM Trainer, Device 14B40A

PERSONNEL:

Personnel requirements for single-shift operation are as follows:

Instructor: One (1) qualified as P-3C RADAR/MAD/ESM operator with a thorough knowledge of SS3 operations.

Trainees: Three (3) who are presently RADAR/MAD/ESM personnel with basic skills in radar target recognition, IFF, MAD/SAD and/or ESM systems.

Maintenance: Four (4) maintenance technicians with prior trainer maintenance experience and thoroughly familiar with Device 14B40A operation.

A minimum of two (2) maintenance men are required at all times of trainer use.

NOTE

When a double-shift training period is used, two instructor/operators and a total of seven (7) maintenance men are required.

RELATED TRAINING EQUIPMENT:

P-3C Trainer Devices 2F87 (T), 2F87A (T), 2F87B (T), and 2F87C (T).

CONTRACT IDENTIFICATION:

Manufactured by the Link Division, Singer Company, Silver Spring, MD 20904 under NAVTRASYSCEN Contract No. N61339-79-G-008-0002.

LOCAL STOCK NUMBER:

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